

United States Department of Agriculture Natural Resources Conservation Service

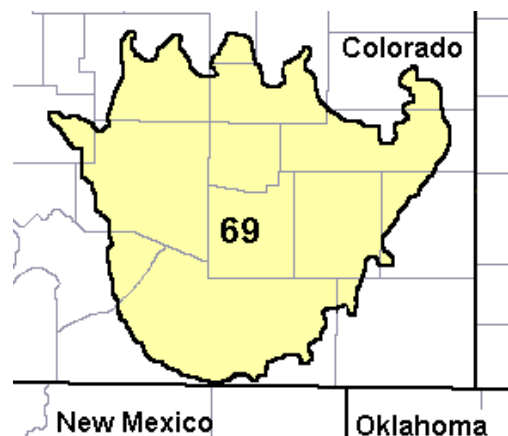
Ecological Site Description

Site Type: Rangeland

Site Name: Alkaline Plains

Site ID: R069XY047CO

Major Land Resource Area: 69 – Upper Arkansas Valley
Rolling Plains



Physiographic Features

This site occurs on nearly level to moderately sloping plains and hills. Slope lengths can be exceptionally long in some areas. All areas are structurally influenced by the presence of shale.

Landform: fans, hills, terrace, ridge, plain

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3600	6000
Slope (percent):	1	15
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	medium	very high

Climatic Features

The mean average annual precipitation varies from 10 to 14 inches per year depending on location and ranges from 5 inches to over 24 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year and can range from 20 to 40 inches per year. Winds are estimated to average about 6 to 7 miles per hour annually. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 60 miles per hour.

The average length of the growing season is 155 days, but varies from 147 to 162 days. The average date of first frost in the fall is October 10, and the last frost in the spring is about May 5. July is the hottest month and January is the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -35 degrees F.

Growth of native cool season plants begins about April 15 and continues to about June 1. Native warm season plants begin growth about May 1 and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	147	162
Freeze-free period (days):	169	186
Mean Annual Precipitation (inches):	10	14

Average Monthly Precipitation (inches) and Temperature (°F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.27	12.1	46.4
February	0.14	0.36	15.3	52.9
March	0.25	0.68	20.7	61.5
April	0.73	1.16	28.9	71.8
May	0.90	2.21	38.6	81.1
June	0.83	1.79	47.6	91.4
July	2.34	2.38	53.4	96.2
August	1.62	2.00	51.7	93.7
September	1.04	1.12	43.3	86.0
October	0.90	0.78	32.2	74.2
November	0.49	0.51	21.0	58.1
December	0.43	0.27	14.1	48.6

Climate Stations		Period	
Station ID	Location or Name	From	To
CO6763	Pueblo Army Depot	1971	2000
CO3828	Haswell	1922	2001
CO7287	Rush	1924	2001
CO4834	Las Animas	1930	2001

For detailed information visit the Western Regional Climate Center at <http://www.wrcc.dri.edu/> website.

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are moderately deep to very deep. They are well drained and have moderately slow to very slow permeability. They occur on hills, ridges, pediments, terraces, and plains. Typically these soils formed in alluvium and residuum from alkaline sedimentary formations. The available water capacity is typically moderate to high. The surface layer ranges from 2 to 10 inches thick and is typically loam, silty clay loam, clay loam, silty clay, or clay. Bedrock occurs at depths of 20 to 60 inches. The pH generally ranges from slightly alkaline to strongly alkaline. The soil moisture regime is ustic aridic but ranges to aridic in the driest areas of MLRA 69. The soil temperature regime is mesic.

Site Type: Rangeland
MLRA: 69 – Upper Arkansas Valley Rolling Plains

Alkaline Plains
R069XY047CO

The Historic Climax Plant Community (HCPC) should exhibit slight to no evidence of rills, wind scoured areas or pedestaled plants. Water flow paths, if present, are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. The clayey subsoil can restrict water movement. Root penetration may or may not be affected.

Major soil series correlated to this ecological site include: Absted, Cadoma, Heldt, Keyner, Litle, Mazanola, Ordway, Pultney, Razor, and Tyrone.

Soil series that will be correlated to other MLRA's when outdated soil surveys are updated are: Litle soils have an aridic ustic moisture regime and are correlated to MLRA 70.

Other soil series that have been correlated to this site include: Deertrail

Parent Material Kind: alluvium, residuum
Parent Material Origin: mixed sedimentary
Surface Texture: clay, clay loam, loam, silty clay loam
Surface Texture Modifier: none

Subsurface Texture Group: silty clay, clay, silty clay loam, clay loam
Surface Fragments $\leq 3''$ (% Cover): 0 to 15 percent
Surface Fragments $> 3''$ (%Cover): 0
Subsurface Fragments $\leq 3''$ (% Volume): 0 to 15 percent
Subsurface Fragments $> 3''$ (% Volume): 0
Rock fragments are generally in the form of soft shale parafragments.

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	well
Permeability Class:	moderately slow	very slow
Depth (inches):	20	60
Electrical Conductivity (mmhos/cm)*:	0	16
Sodium Absorption Ratio*:	0	40
Soil Reaction (1:1 Water)*:	7.4	9.0
Soil Reaction (0.1M CaCl₂)*:	7.0	9.0
Available Water Capacity (inches)*:	3.0	7.0
Calcium Carbonate Equivalent (percent)*:	0	25

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:

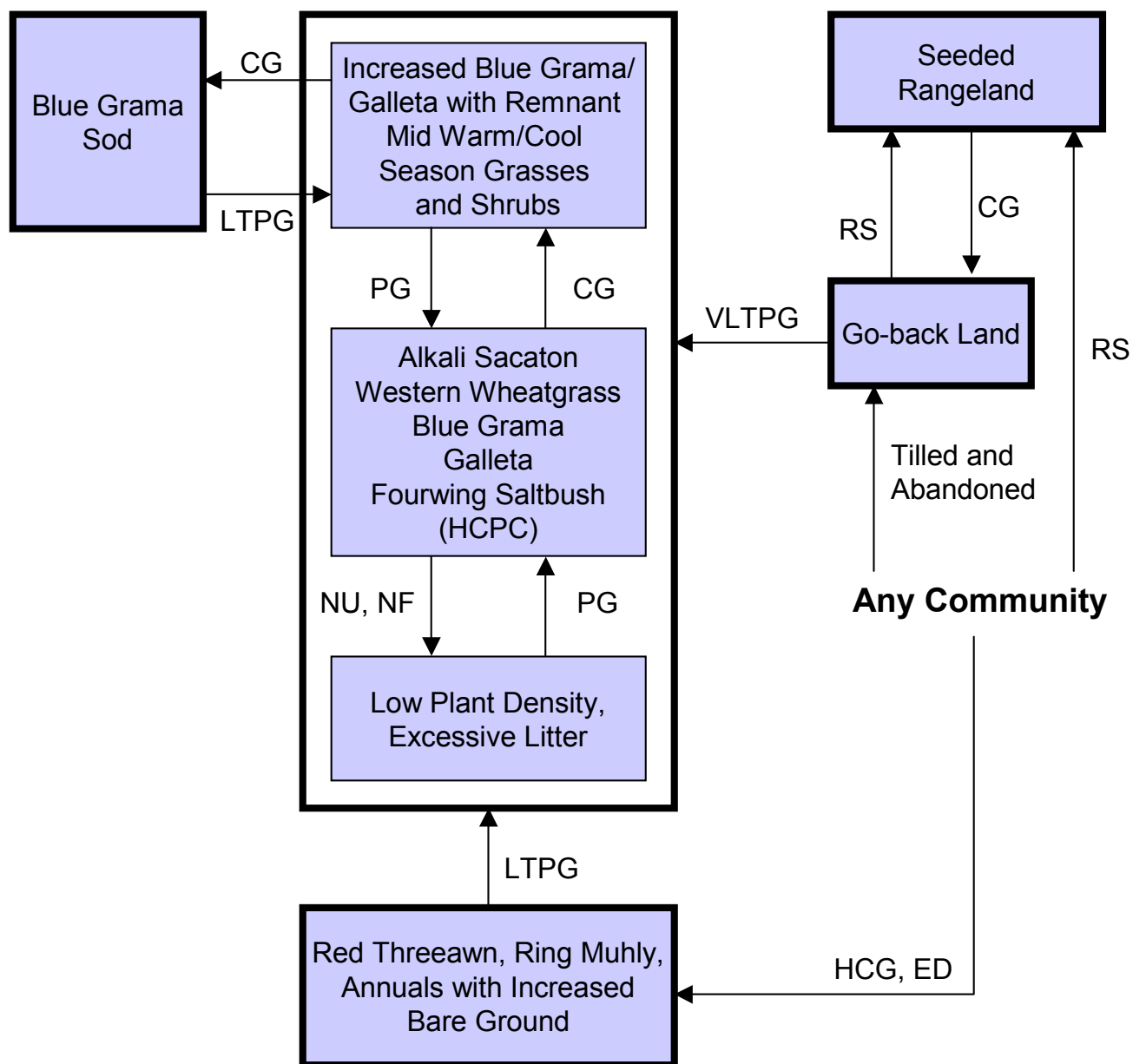
This site deteriorates from continuous grazing without adequate recovery periods following each grazing occurrence. Blue grama, galleta and inland saltgrass will increase. Blue grama will develop into a sodbound condition. Alkali sacaton, alkali bluegrass, green needlegrass and western wheatgrass will decrease in frequency and production as well as key shrubs such as fourwing saltbush and winterfat. American vetch, and other highly palatable forbs will decrease also. Red threeawn, sand dropseed, ring muhly, annuals and bare ground will increase when subjected to long-term continuous grazing. Non-use or rest in the absence of fire will result in excessive litter and reduced plant density.

Drier and warmer climatic conditions exist in the central portion of MLRA-69. This area includes the eastern half of Pueblo county, northern Otero, extreme northwestern Bent, western edge of Kiowa, southern edge of Lincoln and all of Crowley County. These conditions are primarily caused by a rain shadow effect from the southern Rocky Mountains. Evapotranspiration rates (atmospheric demand) will be higher in this area of MLRA-69. Total annual production will typically be lower.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short duration/time controlled grazing and historical accounts.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity, **ED** - excessive defoliation, **HCG** - heavy continuous grazing, **HCPC** - Historic Climax Plant Community, **LTCG** - long term continuous grazing (>40 yrs), **LTPG** - long term prescribed grazing (>40 yrs), **NF** - no fire, **NU** - non-use, **PG** - prescribed grazing with adequate recovery period, **RS** - range seeding, **VLTPG** - very long term prescribed grazing (>80 yrs)

Plant Community Composition and Group Annual Production

			Alkali Sacaton, Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	900 - 1020	75 - 85
alkali sacaton	Sporobolus airoides	SPAI	1	360 - 540	30 - 45
western wheatgrass	Pascopyrum smithii	PASM	1	240 - 360	20 - 30
blue grama	Bouteloua gracilis	BOGR2	1	180 - 300	15 - 25
galleta	Pleuraphis jamesii	PLJA	1	180 - 240	15 - 20
green needlegrass	Nassella viridula	NAVI4	1	12 - 60	1 - 5
buffalograss	Buchloe dactyloides	BUDA	1	0 - 60	0 - 5
alkali bluegrass	Poa juncifolia	POJU	1	0 - 36	0 - 3
inland saltgrass	Distichlis spicata	DISP	1	0 - 36	0 - 3
sand dropseed	Sporobolus cryptandrus	SPCR	1	0 - 24	0 - 2
sideoats grama	Bouteloua curtipendula	BOCU	1	0 - 24	0 - 2
vine mesquite	Panicum obtusum	PAOB	1	0 - 24	0 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 12	0 - 1
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 12	0 - 1
little bluestem	Schizachyrium scoparium	SCSC	1	0 - 12	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 12	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 12	0 - 1
tumblegrass	Schedonnardus paniculatus	SCPA	1	0 - 12	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	12 - 24	1 - 2
other perennial grasses		2GP	1	12 - 36	1 - 3
FORBS			2	60 - 120	5 - 10
American vetch	Vicia americana	VIAM	2	12 - 24	1 - 2
Fremont goldenweed	Oonopsis foliosa var. foliosa	OFOF	2	12 - 36	1 - 3
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	12 - 24	1 - 2
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	2	12 - 24	1 - 2
desert princesplume	Stanleya pinnata var. pinnata	STPIP	2	0 - 12	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	0 - 12	0 - 1
ironplant goldenweed	Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida	MAPIP4	2	0 - 12	0 - 1
povertyweed	Iva axillaris	IVAX	2	0 - 12	0 - 1
prairie coneflower	Ratibida columnifera	RACO3	2	0 - 12	0 - 1
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	0 - 12	0 - 1
silky sophora	Sophora nuttalliana	SONU	2	0 - 12	0 - 1
wedgescale saltbush	Atriplex truncata	ATTR	2	0 - 12	0 - 1
other perennial forbs		2FP	2	12 - 36	1 - 3
SHRUBS			3	120 - 180	10 - 15
fourwing saltbush	Atriplex canescens	ATCA2	3	60 - 120	5 - 10
winterfat	Krascheninnikovia lanata	KRLA2	3	24 - 60	2 - 5
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	12 - 24	1 - 2
black greasewood	Sarcobatus vermiculatus	SAVE4	3	0 - 12	0 - 1
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 12	0 - 1
James' frankenia	Frankenia jamesii	FRJA	3	0 - 12	0 - 1
plains greaseweb	Glossopetalon planitierum	GLPL	3	0 - 12	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 12	0 - 1
shadscale	Atriplex confertifolia	ATCO	3	0 - 12	0 - 1
walking stick cholla	Opuntia imbricata	OPIM	3	0 - 12	0 - 1
other shrubs		2SHRUB	3	12 - 36	1 - 3
	Annual Production lbs./acre		LOW RV* HIGH		
	GRASSES & GRASS-LIKES		330 - 960 - 1190		
	FORBS		55 - 90 - 125		
	SHRUBS		115 - 150 - 185		
	TOTAL		500 - 1200 - 1500		

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. *RV = Representative value.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition table shown above has been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Alkali Sacaton, Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock and can be found on areas that are properly managed with prescribed grazing that allows for adequate recovery periods following each grazing event.

The historic climax plant community consists mainly of mid warm and cool season grasses. The principal dominant mid grasses are alkali sacaton, western wheatgrass and galleta. Blue grama is the dominant short grass. Grass and grass-likes of secondary importance are sideoats grama, alkali bluegrass and sun sedge. Forbs and shrubs such as American vetch, Fremont goldenweed, fourwing saltbush and winterfat are significant. The HCPC is about 75-85% grasses and grass-likes, 5-10% forbs and 10-15% shrubs by air-dry weight.

This plant community is diverse and productive. Litter is properly distributed with very little movement off-site and natural plant mortality is very low. It is well suited to carbon sequestration, water yield, wildlife use by many species, livestock use and is esthetically pleasing. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. This is a sustainable plant community in terms of soil stability, watershed function and biological integrity.

Total annual production, during an average year, ranges from 500 to 1500 pounds per acre air-dry weight and will average 1200 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6901

Growth curve name: Warm season/cool season co-dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	30	20	10	3	2	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods following grazing events will convert this plant community to *Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community*.
- Non-use (rest) and absence of fire will move this plant community to the *Excessive Litter, Low Plant Density Plant Community*.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Alkali Sacaton, Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)*.

Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community

This community developed with longer term continuous grazing and lack of adequate recovery periods. Blue grama has increased but has not yet developed into a sod bound condition. Galleta has increased. Key species such as alkali sacaton, western wheatgrass, green needlegrass, American vetch, fourwing saltbush and winterfat have been reduced to remnant amounts. Forbs and shrubs such as scarlet globemallow, green plume rabbitbrush and broom snakeweed have increased.

Total aboveground carbon has been lost due to decreases in forage and litter production. Reduction of rhizomatous wheatgrass, nitrogen-fixing forbs, shrub component and increased warm season short grass has begun to alter the biotic integrity of this community. Water and nutrient cycles are becoming impaired.

Total annual production, during an average year, ranges from 300 to 850 pounds per acre air-dry weight and will average 650 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6903

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	15	35	25	15	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery opportunities between grazing events will move this plant community across an ecological threshold toward a *Blue Grama Sod Plant Community*.
- Prescribed grazing with adequate recovery periods following each grazing event during the growing season with a proper stocking rate will return the plant community to the *Alkali Sacaton, Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)*.

Excessive Litter, Low Plant Density Plant Community

This plant community occurs when grazing is removed for long periods of time (rest) in the absence of fire. Plant composition is similar to the HCPC, however individual specie production and frequency will be lower.

Much of the nutrients are tied up in excessive litter. The semiarid environment and the absence of animal traffic to break down litter slow nutrient recycling. Aboveground litter also limits sunlight from reaching plant crowns. Many plants, especially bunchgrasses (alkali sacaton, green needlegrass, sideoats grama) die off. Thick litter and absence of grazing animals (animal impact) reduce seed germination and establishment.

In advanced stages, plant mortality can increase and erosion may eventually occur if bare ground increases. Once this happens it will require increased energy input in terms of practice cost and management to bring back.

Total annual production, during an average year, ranges from 300 to 1200 pounds per acre air-dry weight.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6902

Growth curve name: Warm season/cool season co-dominant, excess litter; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	22	33	18	12	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing with adequate recovery opportunities between each grazing event and/or prescribed burning followed with prescribed grazing can restore this plant community back to the *Alkali Sacaton, Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)*.

Blue Grama Sod Plant Community

This plant community has developed with further continuous grazing. Fourwing saltbush and winterfat have been removed. Alkali sacaton, galleta and western wheatgrass may persist in trace amounts. Blue grama dominates the community and has developed into a sod bound condition. Inland saltgrass, buffalograss, red threeawn, ring muhly, bottlebrush squirreltail, desert princesplume, silky sophora, twogrooved milkvetch, mouse-ear povertyweed and broom snakeweed have also increased.

This plant community is resistant to change due to grazing tolerance of blue grama. A significant amount of production and diversity has been lost when compared to the HCPC. Loss of cool season grasses, shrub component and nitrogen fixing forbs have negatively impacted energy flow and nutrient cycling. Water infiltration is reduced significantly due to the massive shallow root system “root pan”, characteristic of sodbound blue grama. Soil loss may be obvious where flow paths are connected.

It will take a long time to bring this plant community back to the HCPC with improved management. Renovation of this community would be very costly. Desertification is advanced.

Total annual production, during an average year, ranges from 100 to 500 pounds per acre air-dry weight and will average 300 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6904

Growth curve name: Warm season dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	45	25	15	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Heavy continuous grazing or excessive defoliation without adequate recovery periods following each grazing event will shift this plant community toward the *Red threeawn, Ring Muhly, Annuals, Bare Ground Plant Community*. Erosion and loss of organic matter/carbon reserves are concerns.
- Long-term prescribed grazing with adequate recovery periods between grazing occurrences and proper stocking will move this plant community toward the *Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community* and eventually to the *HCPC* or associated successional plant communities provided adequate seed/vegetative sources exist. This change will require a long period of time (greater than 40 years), and may be difficult to attain depending on the degree of degradation.

Red Threeawn, Ring Muhly, Annuals with Increased Bare Ground Plant Community

This plant community develops under long term continuous grazing. It is in an extremely degraded condition. Blue grama can occur in remnant amounts or be totally absent. Lower successional perennial species that dominate the community are red threeawn, ring muhly, walkingstick cholla, broom snakeweed and plains pricklypear. Russian thistle, kochia and cheatgrass are common annual invaders.

Bare ground is a major concern. Erosion potential is high especially where flow paths are continuous. Soil loss is expected and can be severe especially on long unbroken slopes. Plant pedestalling and rills can be evident. This community lacks stability, diversity and productivity. Desertification is well advanced.

Total annual production, during an average year, ranges from 25 to 150 pounds per acre air-dry weight.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6903

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	15	35	25	15	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Long-term prescribed grazing with adequate recovery periods between grazing events and proper stocking can eventually move this community back to the *HCPC* or associated successional plant communities depending upon the degree of degradation of the plant community and available seed/vegetative sources. This transition may take up to 40 years or more.
- Range seeding followed by prescribed grazing may be used as an alternative to convert this plant community to a *Seeded Rangeland* community, which can closely resemble the *HCPC* however, at a substantial cost.

Go-back Land

Go-back land is created when the soil is tilled or farmed (sodbusted) and abandoned. All of the native plants are destroyed, soil organic mater is reduced, soil structure is changed and a plowpan or compacted layer is formed. Residual synthetic chemicals often remain from past farming operations and erosion processes may be active.

Over time, early successional perennials and annuals begin to cover the soil surface. Kochia, Russian thistle, cheatgrass are an example of some early annuals, which begin to establish. The plant community in time will become dominated by red threeawn. Eventually, sand dropseed, ring muhly, bottlebrush squirrletail will begin to establish.

Soil structure has been altered. Organic matter has left the system through erosion and/or decomposition. Erosion can be accelerated if ground cover is lacking especially on longer slopes. Water cycle, nutrient cycle, energy flow and community dynamics are severely degraded.

Transitions or pathways leading to other plant communities are as follows:

- Very long-term prescribed grazing that allows adequate recovery periods following each grazing event and proper stocking will most likely revert to a blue grama dominated plant community and eventually back to the *HCPC* or associated successional plant community. This process can take 80 years or more if an adequate seed/vegetative source is present. Intensive prescribed grazing with adequate recovery periods between grazing events will accelerate the recovery process.
- Rangeland seeding followed with prescribed grazing can be used to convert *Go-back Land* to a *Seeded Rangeland Plant Community*. This can be a short transition time frame however, at a high energy and financial expense.

Seeded Rangeland

This community results from *Any Plant Community* that was tilled and seeded to adapted native plant species. A seed mixture of adapted native grasses, forbs and shrubs should be used to accomplish various management objectives however, revegetation is extremely difficult and costly due to soil limitations.

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events can shift this plant community to vegetation characteristic of *Go-back Land*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

The combination of heavy soils and grasses, forbs, and shrubs found on this ecological site provide habitat for numerous wildlife species. Historic large grazers that influenced these plant communities were bison, elk, and pronghorn. Changes over time have resulted in the loss of bison, the reduction in elk numbers, and pronghorn population swings. Domestic grazers now share these habitats with wildlife. The grassland communities of eastern Colorado are home to many bird species. Changes in the composition of the plant community when moving from the HCPC to other communities on this ecological site may result in species shifts in the bird community. The occasional wetland or spring found on this ecological site provides essential seasonal water needed for reproductive habitat by some reptiles and amphibians. Because of a lack of permanent water, fish are not commonly expected on this ecological site. Mule and white-tailed deer may use this ecological site. The gray wolf and wild bison used this ecological site in historic times. The wolf is thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

Alkali Sacaton, Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)

The grasses, forbs, and shrubs in this plant community provide habitat for many reptiles including western rattlesnake, bullsnake, and racer. If water is available for breeding, spadefoot toads and tiger salamanders may be found here. The structural diversity in the plant community on this site provides habitat for Cassin's sparrow and lark bunting. Ferruginous and Swainson's hawks are commonly seen on this site. Small mammals such as white-tailed jackrabbit, badger, swift fox, plains pocket gopher, and several species of mice are common in this plant community. Pronghorn is a typical ungulate found in this community.

Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community

All HCPC species are expected in this plant community, however, the loss of some of the vegetative structural diversity in this plant community makes it less attractive to the HCPC species.

Excessive Litter, Low Plant Density Plant Community; Blue Grama Sod Dominated Plant Community; Red Threeawn, Ring Muhly, Annuals with Increased Bare Ground Plant Community; and Go-back Land

Reptiles using these plant communities are similar to the HCPC species. As vegetation becomes shorter and bare ground increases, conditions improve for lesser earless lizard and Texas horned lizard. The loss of vertical and species diversity in these plant communities results in a shift of the bird community to burrowing owl and mountain plover. With the exception of the hawk species, HCPC bird species would not be common in these communities. Most mammals will be the same as in the HCPC, however black-tailed jackrabbit and black-tailed prairie dog use will increase because of the changing plant community.

Seeded Rangeland

The wildlife species expected on seeded rangeland would be those listed for the plant community the seeding most resembles.

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-like							
alkali bluegrass	U D U D	D P U D	U D U D	U P N D	U P N D	U D U D	U D U D
alkali sacaton	U D D U	N U N N	U D D U	N U N N	N U N N	U D D U	U D D U
blue grama	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
bottlebrush squirreltail	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
buffalograss	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D
galleta	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N
green needlegrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
Indian ricegrass	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D
inland saltgrass	N U U N	N N N N	N U U N	N N N N	N N N N	N U U N	N U U N
little bluestem	U D P U	N D D N	U D P U	N D D N	N D D N	U D P U	U D P U
red threeawn	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
ring muhly	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	N N N N
sand dropseed	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U N
sideoats grama	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
sun sedge	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
tumblegrass	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
vine mesquite	U D P U	U D D U	U D P U	U D D U	U D D U	U D P U	U D P U
western wheatgrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
Forbs							
American vetch	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
desert princesplume	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
dotted gayfeather	U U D U	U D P U	U U D U	U D P U	U D P U	U U D U	U U D U
Fremont goldenweed	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
ironplant goldenweed	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
povertyweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
purple prairie clover	U P P D	U P P U	U P P D	U P P U	U P P U	U P P D	U P P D
scarlet globemallow	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
silky sophora	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
twogrooved milkvetch	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
wedgescale saltbush	D D P D	D U U D	D D P D	D U U D	D U U D	D D P D	D U U D
Shrubs							
black greasewood	U D D U	T T T T	U D D U	D U U D	D U U D	U D D U	D U U U
broom snakeweed	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
fourwing saltbush	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P
James' frankenia	N N U U	U U N U	N N U U	U U N U	U U N U	N N U U	N N U U
plains greasewood	N N N U	U U D U	N N N U	U U D U	U U D U	N N N U	N N N U
plains pricklypear	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
shadscale	D D P D	D U U D	D D P D	D U U D	D U U D	D D P D	D U U D
walking stick cholla	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
winterfat	P P D P	P P P P	P P D P	P P P P	P P P P	P P D P	P P D P

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic

[†] Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions. Continuous grazing is not recommended. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Alkali Sacaton, W. Wheatgrass, Blue Grama, Galleta, Fourwing (HCPC)	1200	0.38
Increased Blue Grama w/Remnant Warm/Cool Season Grasses/Shrub	650	0.21
Blue Grama Sod	300	0.09
Low Plant Density, Excessive Litter	*	*
Red Threeawn, Ring Muhly, Annuals, Bare Ground	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

* Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group D. Infiltration is low and runoff potential for this site varies from moderate to high depending on ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

(069XY006CO) – Loamy (formerly Loamy Plains)
(069XY037CO) – Saline Overflow
(069XY033CO) – Salt Flat

Similar Sites

(069XY046CO) – Shaly Plains
[shallow soils, lower production]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Ben Berlinger, Rangeland Management Specialist, NRCS; Scott Woodall, Rangeland Management Specialist, NRCS; Lee Neve, Soil Scientist, NRCS; Julie Elliott, Rangeland Management Specialist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

N/A

Field Offices

Canon City, Colorado Springs, Cheyenne Wells, Eads, Holly, Hugo, Lamar, Las Animas, Pueblo, Rocky Ford, Simla, Springfield, Trinidad, Walsenburg

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpcc.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

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Site Description Approval

/s/

03/25/2004

State Range Management Specialist

Date